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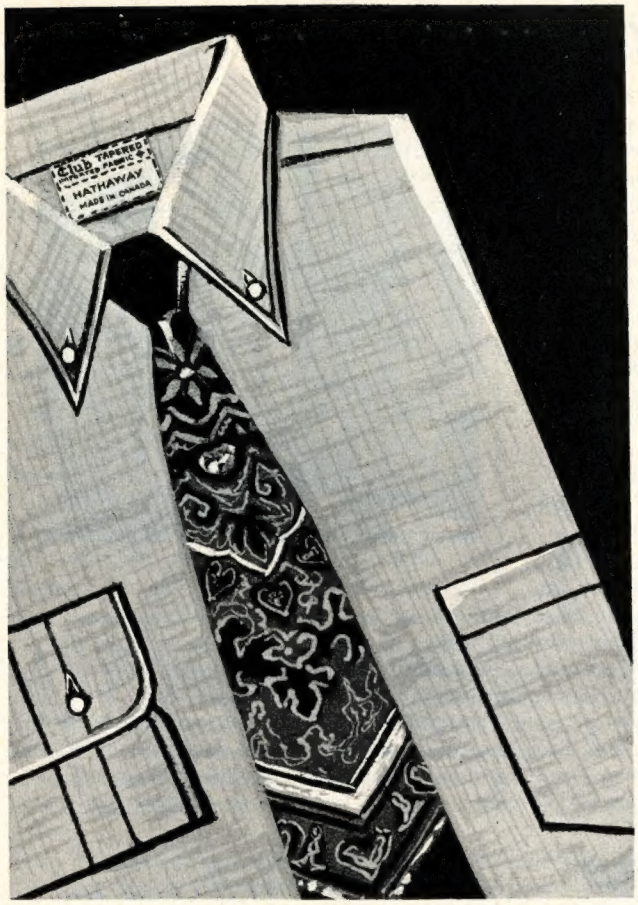

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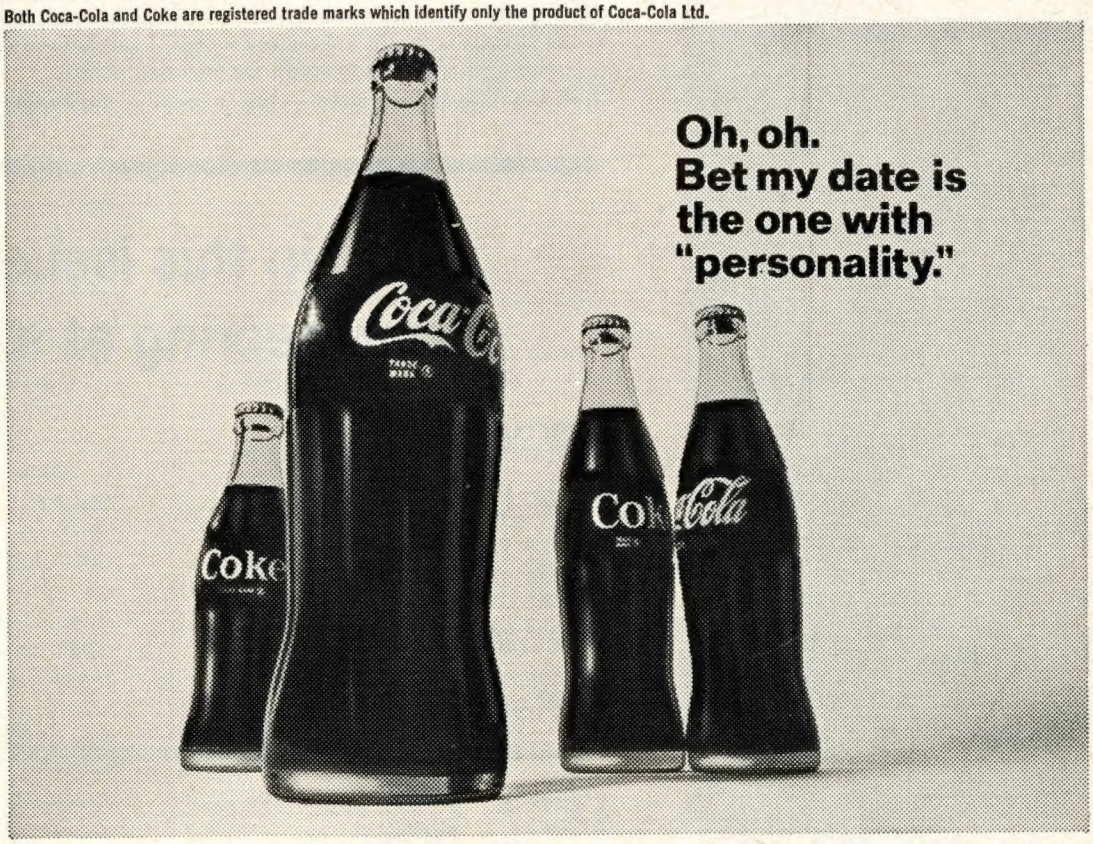

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ASSOCIATION OF ALUMNI
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from the managing editor:

There's this zoologist who crossed a parrot with a tiger. He can't identify the animal that resulted, but when it talks, he *listens.*

This may be a fair description of the average student, since everybody from university principals to the cop on the beat listens when he speaks, for he speaks in tones that are rather less than dulcet. Seriously, though, there are thousands of young men and women who are readily identified because of their total commitment to a struggle which is infinitely more tangible than the objectives of the Quixotic, windmill tilting activists and syndicalists.

The struggle to know is one of the most exciting dramas of history, and everyone who has ever tried to learn anything has participated in this process to some extent. There is a deep yearning within strong, young minds to know the unknown, to increase in understanding, and to do what has never been done before. In rare rich moments, university students find this exultation in their discoveries, new insights or in new patterns of ideas and concepts they have formed. The trained minds and disciplined curiosity of the more energetic students will tend to pull away from the didactic paternalism of their professors — especially if they feel they are simply getting answers to questions that people no longer ask.

To the graduates as they leave Sir George this year, I make but one request: look for the answers to the questions that are being asked. Perhaps I should add a special word of congratulations to the first class of engineers to graduate from Sir George but words are words are only words, so in the belief that one picture really is worth a thousand words, I ask not only the engineering grads but the whole Class of '68 to study the enclosed photo.

It is only a casual snapshot — but it contains the kernel of all that is education.

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letters to the editor

Dear Sir:

Can an academic, activist conformist be developed? Is this question contained in the 1968 Winter Issue of the *Postgrad?*

Although it's certainly to be expected out of a teaching community, activism per se may or may not be a pertinent involvement in society. And it certainly isn't the only end in academics.

Extending the foregoing to another perplexing thought about academics, shouldn't the University, taken as a community, be something of a monad in the larger community. But shouldn't the University, when all things are held constant, be more than a mirror of the larger community?

For a monadic example, I shouldn't think that by going through a demographic portrayal of the larger community, one would find an expansion of what would be found in the demography of a University.

Sincere regards,
Kenneth G. Coward.

the editor replies :

Mr. Coward errs in viewing our University-Society paradigm as a simple micro-macrocosm relationship. That activism is *pertinent to society does not seem to be debatable, any longer. Certainly, much of Western thought (and activity) seems to be founded on dialectical processes of one sort or another, and current events of the past thirty or so years indicate that the University structure is* merging *with society at large, rather than remaining a "monad" within a larger community. In a circumstance such as this, activism within a University is not a reflection of, but* part *of critical processes occurring within society. No longer can student disturbances be viewed as "local" phenomena, occurring because of conditions peculiar to a closed-off, insular community. Mr. Coward seems to think that we rationalize student activism by making a comparison from societal processes to University processes, when in actuality we argue the opposite case, not to rationalize any position, but to explain the connection.*

engineering at s.g.w.u.

ENGINEERING AT Sir George Williams will have completed its first cycle of development with the granting at the 1968 Spring Convocation of the Bachelor of Engineering degree to a group of students larger in number than the first class admitted to the embryo "Certificate Programme" in the fall of 1957. The evolution from a small, experimental, tentative, and hesitant, somewhat second-class status to full partnership in the University, has taken place during a decade in which Sir George itself has evolved to full partnership in the Canadian University community.

Certificate Programme Established

The establishment at Sir George of Engineering courses was due to the initiative taken by a small group of members of the Board of Governors of the College, headed by Dr. Austin Wright (then general-secretary of the Engineering Institute of Canada) and Dr. Irving Tait (still an active member of the University Board). This group was aware of the growing importance to the Canadian economy, of well-trained Engineers, and to the total absence in Canada of opportunities for part-time study leading to a degree in Engineering.

They were led to the conclusion that Sir George Williams College, with its tradition of providing degree programmes for fully-employed persons, was the obvious place at which evening study should be made available in Engineering.

At the request of the Board a Faculty Committee consisting of Professors, Madras, Raudorf, N. E. Smith, Verschingel, Ufford, Petolas and Bordan undertook a study of the possibility of establishing a two-year programme, following the pattern of that in existence at Carleton, which would be offered to part-time evening as well as full-time day students. The Carleton programme accepted students after senior Matriculation, equivalent to our first year of Science, and led to a Certificate in Engineering. Holders of the Certificate were eligible to apply for admission to other Universities, most notably McGill, in order to complete a further two years leading to the Bachelor of Engineering degree. The committee found that the establishment of a similar programme at Sir George was indeed feasible and recommended that the first class be accepted in both day and evening divisions in the fall of 1957.

A report to the Engineering Committee of the Board, dated March 1958, shows that we admitted 27 day students and 30 evening students in the 1957-58 academic year; provided 27 hours per week of instruction in the day and 12 hours per week in the evening; had two full-time faculty; shared a draughting room with the School of Art; and had an equipment inventory of thirty-one draughting tables, one transit, two levels, one chain and pins, two range poles, and one rod.

The success or failure of our programme depended upon the acceptability of our students to the fourth year at McGill. The principle criterion upon which acceptability was to be judged was the equivalence between our curriculum and McGill's. We therefore undertook to match our programme, course for course, as closely as possible to the McGill pattern, following the long-established relationship between Carleton and McGill. And then came sputnick! The successful orbiting of man's first artificial satellite, on October 4th, 1957, was the shot of adrenalin which accelerated the pace of Engineering curriculum change on the North American continent. Curricula which had been evolving slowly, if at all, in the previous decade were suddenly subjected to almost revolutionary changes. Sir George had concluded a gentleman's agreement with McGill in a rather static environment, only to find itself propelled into a dynamic relationship whose principal characteristic was rapid change. We were faced with the very real meaning of "... there would be changes at McGill in the near future but (McGill) hoped that we might be able to adapt to these changes when they arise..." a statement made to us by McGill's Dean of Engineering in 1958.

As the next few years passed we became particularly adept at jumping through the hoop at McGill's blowing of the whistle. It became increasingly apparent that the days of an easy feeder relationship were numbered, and that

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a historical perspective

PROFESSOR JACK BORDAN
DEAN OF ENGINEERING
SIR GEORGE WILLIAMS UNIVERSITY

MECHANICAL

AS IN ALL branches of Professional Engineering, the Mechanical Engineer is concerned with the creation of devices, systems, structures and processes for human use. "His task is to apply scientific, mathematical, economic and social knowledge to satisfy specific needs."[1] The services required of Mechanical Engineers encompass a very wide range of professional activity, such as design, research, development and management carried out in environments of equally diverse nature, such as industry, private practice, university and government.

Traditionally the Professional Mechanical Engineer has been responsible for the design, development and utilization of all forms of power-generating equipment and associated control devices. Classical examples are the development of steam power plants and the internal-combustion engine. The latter is a tribute to the ingenuity of mechanical engineers who have managed to produce smooth, controlled rotary power from "bottled" explosions by means of a wildly gyrating assemblage of pistons, rods and camshafts. Yet this most improbable device has been developed to a high degree of efficiency and will probably continue to be used in automobiles and other applications where small power plants are required. The present-day Mechanical Engineer is more likely to devote his efforts to power-generating equipment, such as turbo jets and nuclear power plants, which have gained wider use since their inception approximately 20 to 30 years ago. Other more dramatic means of energy conversion and power generation are rocket engines, fuel cells, solar cells and magneto-gas dynamics, and although these topics are fairly remote from the lives of most people, the present-day engineer must have a knowledge of the principles involved in these more exotic applications usually associated with the space age. The majority of Mechanical Engineers are involved with more commonplace miracles that daily affect the lives of everyone. Prime examples are in the field of domestic and public utilities, where the profound burden of public safety, placed on the engineer by a society demanding the benefits of technical progress, is dramatically emphasized.

Other representative fields of endeavour for the Mechanical Engineer include design of mechanisms and machines, controls and automation, vibration analysis, environmental control (heating, ventilating and refrigeration), materials handling and precision measurement. Any of the specific fields may involve the design, construction and control of machines and equipment as well as the research and development of new processes, materials and techniques.

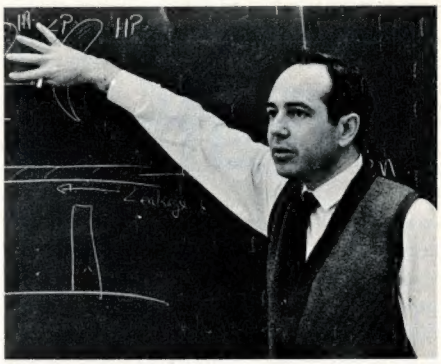
The characteristic activity of the Mechanical Engineer is one of intellectual effort, most often directed toward creative design. Much of his work is done as part of a team working toward a common objective; his habitat is an office or conference room, contrary to the view held by some of the public that he is to be found at a drawing board or wielding a wrench in an oil-spattered engine room while tinkering with oil-coated machines.

The majority of Mechanical Engineers work in industry where their special skills of innovation and creativity have been recognized as being the prime factor in creating employment opportunities for others. "It has been estimated that one engineering doctorate can create employment opportunities for 5 to 10 engineers who in turn can each create employment opportunities for 10 to 15 skilled workers."[2] Thus one engineering doctorate can generate employment for about 100 other people. Consequently, engineers contribute significantly to the alleviation of one of modern society's most pressing problems, in addition to their other, more classical, functions.

Many engineers in government are engaged in design, research and development work, but their special duties also contribute to the formation of public policy and law enforcement pertaining mainly to environmental regulation, public transportation, services and utilities. Fewer Mechanical Engineers are engaged in private consulting practice, and some of these offer their services directly to the public for a fee similar to medical practioners and lawyers. In these capacities, a thorough background in law and economics is of paramount importance.

(1) John Dustin Kemper, "The Engineer and his Profession", Holt, Rinehart and Winston, Inc., New York, 1967.

(2) Engineering Institute of Canada; "A Canadian Policy for Research and Development", E.I.C. March 1967.



ASSOCIATE PROFESSOR DR. M. P. DU PLESSIS, CHAIRMAN MECHANICAL ENGINEERING, 1967-68.

Consistent with the exacting demands made on the present day engineer, Sir George Williams University offers a unique undergraduate programme in Mechanical Engineering. In view of the very wide range of activities in the field, the fourth and fifth year curricula consist of a combination of core courses with a series of electives. Strong emphasis is given to building on the principles presented in the basic engineering science and physical systems courses in the first three years of the programme, which are common to all engineering disciplines.

The core courses are taken by all Mechanical Engineering undergraduates and deal with topics which are basic to the field, including mathematics, control theory, thermodynamics, fluid mechanics, heat transfer, machine design, materials science and engineering economy and practice. The electives allow a student to specialize in a particular area of the field, depending on his interests and expected future professional activity. Four general areas of specialization are available, namely, conventional mechanical engineering, mechanical control systems, mechanical vibrations and computer applications in engineering. In this respect, the programme is probably unique in Canada. The mechanical control systems option, is not offered at the undergraduate level at any other university in Canada and will answer a serious industrial lack of specialists in this area.

Extensive planning of supporting services and facilities for the undergraduate programme has resulted in well equipped modern laboratories. In addition, a machine shop capable of producing high quality, precision equipment for all the engineering laboratory and research work has been included. Other supporting services are the analog section of an expandable hybrid computer and the University's digital computer, access to which can be obtained by a remote console in the Engineering

(Continued on page 18)

ASSOCIATE PROFESSOR
DR. M. McC. DOUGLASS, CHAIRMAN
CIVIL ENGINEERING COMMITTEE 1967-68

PROFESSOR C. L. MILLER of the Massachusetts Institute of Technology has defined Civil Engineering as "the engineering of systems of constructed facilities" where the civil engineer seeks "the fulfillment of human needs through the adoption and control of the land — water — air environment".

A civil engineer performs many different complex tasks. He *must* recognize and define a problem, postulate methods of solution, perform calculations, obtain, evaluate and implement the results. He *must* continually make decisions throughout the solution of a problem. He *must* call upon his technical knowledge, experience, intuition, judgement, imagination and creativity in making his decisions. An engineer investigates alternative solutions, resolves conflicts and makes value judgements consistent with the time and economic constraints of the problem.

Civil Engineering — as old as recorded CIVILization and perhaps even older — is by far the oldest of human activities. It arises out of the material needs of individuals and of society itself. It creates the environment in which we live. Today most of the world is still underdeveloped. Much that is developed is inadequate and outdated. Today society requires engineers who have the vision to foresee its needs and the ability and imagination to devise methods and equipment to satisfy them.

In serving such needs, the civil engineer influences many of our daily activities — the highways we travel, the buildings in which we live and work, the water we drink, are there largely as the products of civil engineering. Navigation and flood control systems, drainage and waste disposal systems, transportation networks, irrigation systems for food production will continue to be among the vital contributions of civil engineering to the world's ever-increasing population.

The solution of engineering problems usually involves the consideration of many engineering disciplines. For example, even with a relatively small problem such as the design of a highway interchange, an engineer must consider the highway location and design (highway engineering), settlement, stability and foundation conditions (soil mechanics), highway bridges (structural engineering), drainage (hydraulic engineering), and traffic flow (transportation engineering). Engineers recognize each of these separate disciplines and the necessary interactions that must exist for effective design. In the past, the complexity of engineering problems and the large amounts of data often forced an engineer to decompose a problem unnaturally into non-interactive tasks. Many of the feedback aspects of the problem had to be overlooked. An engineer did not have the necessary tools to coordinate the data and perform the calculations with all interactions considered. In the near future, completely automated and sophisticated computer systems will take over all phases of routine and complex analytical work, including the optimum design of components and assemblies in a system. This will free the engineer to spend more time on the creative functions of design, on the selection and development of new materials, and on the consideration of the many sociological, cultural and other intangible factors that enter into engineering design.

Civil engineering therefore demands men who are expert in one or more sub-fields, and it also requires general practioners who can co-ordinate the work of other engineers and non-engineers into team efforts. The profession requires men who have a sound basis in mathematics, science and engineering technology because change is so rapid that many lessons gained from experience soon become outdated. Civil engineering demands men who have a good general education, capable of communicating effectively with many other professionals and non-professionals, for the work of the civil engineer impinges directly on the well-being of people and brings him into contact with people of many different occupations.

The scope of civil engineering varies from research and development to broad planning, technical design, construction, operation, maintenance, sales, and administration and management. The profession demands of the universities that they produce men and women capable of fulfilling these responsibilities. The department of civil engineering at Sir George Williams University has accepted the challenge and has gathered faculty from all over the world — qualified men of varied backgrounds and experience. We have developed a curriculum of undergraduate study that is two-fold in purpose; to provide industry with graduates who are of immediate use to their employers, and to ensure that our graduates have had a thorough grounding in fundamentals of science and engineering methodology so that motivation for further development is continued long after the reward of good grades ceases to be an incentive.

Anyone who has heard of engineering at Sir George is aware that "Physical Systems" is the unifying theme in our undergraduate program. This prepares the budding Civil Engineer for the systems approach which seeks a fresh and general view of an entity. It integrates many physical and behavioral disciplines. It seeks to find solutions by simulation of physical or other situations by theoretical models and the use of advanced mathematical concepts amenable to solution on modern digital and analog computers. The whole process enforces a more rigourous and formal discipline upon the individual.

Research interests of faculty members range over many of the sub-fields of civil engineering and help to vitalize undergraduate instruction. Eighty percent of the civil engineering faculty members have received grants from the National Research Council for carrying out various research programs in the coming year. These will be facilitated by the excellent laboratories in the Civil Engineering department which are furnished with the most up-to-date equipment. Undergraduate teaching, too, is complemented by our well-equipped laboratories in Materials, Soil Mechanics, Mechanics of Materials, Hydraulics, Experimental Stress Analysis and Structures.

We are continually striving to provide our students with the teaching, guidance and motivation that will ensure that they will be prepared to take their rightful place in the nation and in our society.

CIVIL

ELECTRICAL

ASSOCIATE PROFESSOR
J. F. LINDSAY, CHAIRMAN
ELECTRICAL ENGINEERING
COMMITTEE 1967-68

ELECTRICAL ENGINEERING is concerned primarily with energy and information; their conversion, transformation and transmission in the most efficient, convenient and reliable manner. It is now hard to imagine life without electric motors to do an almost infinite variety of chores requiring mechanical motion. Production of artificial light for general illumination and signalling has become a necessity. The electrical engineer is involved not only in the design, manufacture and application of such devices, but also in the original conversion from mechanical, thermal, solar, wind, or nuclear energy to electrical form and its transmission to the place where it is required. Although this convenient conversion and transmission of large quantities of energy has had a profound effect on society, perhaps a greater revolution in the life of mankind will result from the role of electrical engineering in the field of information processing and transmission. Telegraph, telephone, radio, and television have improved the communication of information almost unbelievably. Radar systems gather information about the location and motion of many objects including ships, airplanes, and thunderstorms. The digital computer has enabled numerical data to be processed at rates which enable calculations otherwise requiring years of work, to be completed within hours or perhaps minutes.

Of course, not all of electrical engineering's contributions to society are applauded universally. The full benefits of the telephone and the digital computer, for example, may not be realized until each individual becomes a "number". It may already seem impossible to get away from the sound of music when shopping. Many a motorist has doubtless considered the use of radar in a speed trap a particularly perverse use of technology. The contribution to modern art by making feasible "electronic music" and other experiences of sight and sound, certainly arouses mixed feelings. The social consequences of engineering have therefore not been forgotten in the electrical engineering programme at Sir George, as will be shown later.

Electrical Engineering is based on phenomena which were first observed around 600 B.C. However, more than twenty-two centuries passed before there was any serious investigation, and most modern electrical engineering is the result of developments within the last century. The first applications were directed towards the telegraph. After the invention of the incandescent lamp in 1879, there was considerable activity in the development of generators, and the formation of distribution systems supplied from a central power plant. Almost at the same time the induction motor was developed, thereby introducing the first great controversy in electrical engineering. The first power stations had produced direct current, but the induction motor, which was quickly seen to be superior to the direct-current motor in many respects, required alternating current. Thus, a choice had to be made. It is unlikely that all the consequences of the decision were foreseen at the time, but many of the characteristics of the modern power system which now are expected and demanded are a direct result of that decision. For example, such a small item as inexpensive electric clocks as they exist today in large quantities would not otherwise have been feasible. The invention of the vacuum tube around the beginning of the twentieth century was a major breakthrough in the field of communication since it led directly to the development of the key components in radio and television. The development of the transistor in the 1940's and the integrated circuit more recently have opened up further possibilities which suggest an exciting future for electrical engineering.

Although electrical engineering as a professional discipline has existed for little more than a hundred years, it is already a very broad field in the sense that there are many specialities included within it. Indeed, the Institute of Electrical and Electronics Engineers publishes Transactions in more than thirty different areas which include Power, Circuit Theory, Illumination, Control, Medical Electronics, etc. Thus, in common with other branches of engineering, electrical engineering is faced with a paradox: simultaneously there is a requirement for increased specialization and for greater breadth in the knowledge of the practising engineer. This paradox is particularly perplexing to Faculties of Engineering when it is realized that the engineering graduate of 1968 has to practise his profession until the beginning of the twenty-first century. There may have been a time when it was reasonable to counsel a student to study engineering because "he is good with his hands". For many years now, any student having this as his main reason for choosing engineering is unlikely to progress beyond the second year of an undergraduate programme. The demands of the profession are now such that not only is an interest in "making things" desirable, but also the ability to describe them precisely in abstract terms at the design stage is absolutely essential. Therefore, the curriculum in electrical engineering at Sir George has been developed on a

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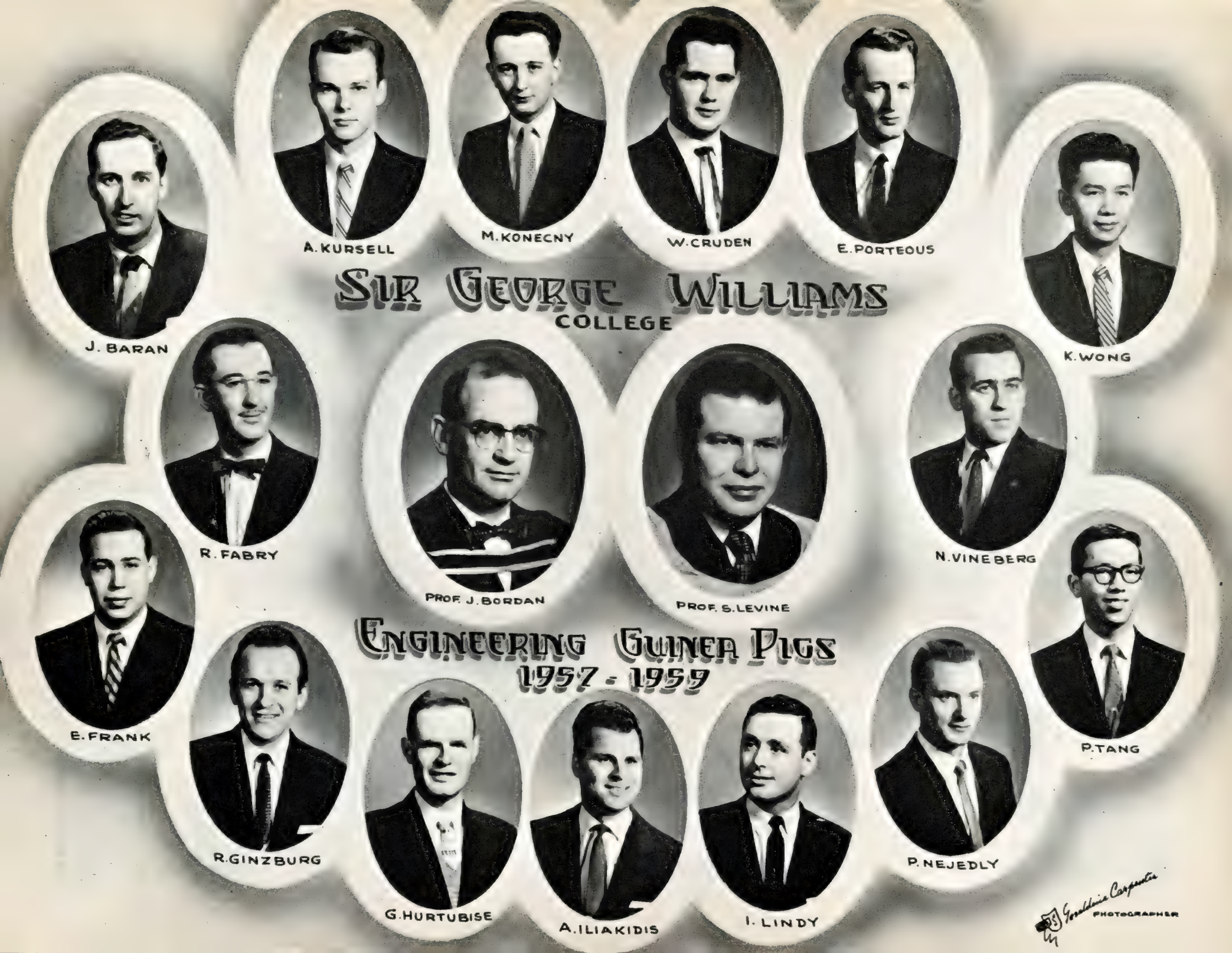
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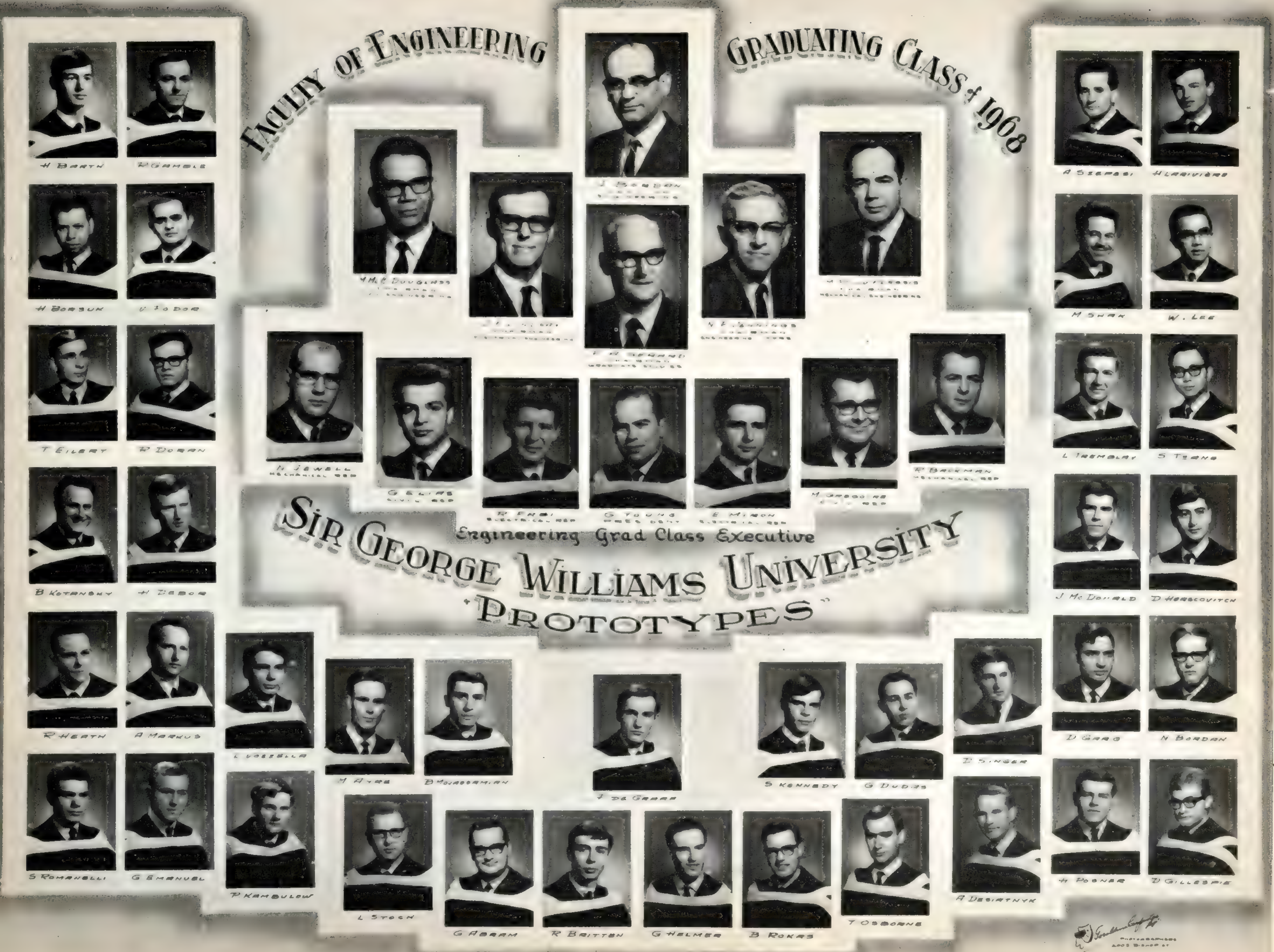
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NEWS RELEASES

S.G.W.U. MARKETING EXPERT TO COMMUNIST CHINA . . . BELIEVED FIRST SUCH WESTERN SCHOLAR . . .

Dr. Bruce Mallen, Chairman of the Department of Marketing and Chairman of Graduate Studies, M.B.A. program at Sir George Williams University will be visiting and studying the marketing practices of Communist China from June through July.

He will be joining Dr. Barry M. Richman, a Canadian and former Montrealer who is Professor and Divisional Chairman, Department of Management, and also Chairman of the Program in Comparative and International Management Studies at the Graduate School of Business, University of California, Los Angeles.

Dr. Mallen, a marketing economist and distribution authority, will study Communist China's distribution system and will analyze the impact of such environmental factors as geography, the economic system, anthropological forces, and government as they affect wholesaling, retailing, distribution channels, merchandising, selling, advertising and promotion. Professor Mallen will study the organization of Communist China's domestic trade, the planning involved in the distribution of consumer goods, and the pricing of those goods. He will attempt to see how the Chinese reconcile the classical Marxist doctrine which holds that traditional marketing functions are parasitic and contribute almost nothing to national economic welfare, with the reality of economic life — the need to bridge the gap between production and consumption in some orderly fashion. While in China, Mallen and Richman will visit manufacturing, wholesaling and retailing establishments in Canton, Shanghai, Peking, Wuhan, Hangchow and Wusih.

Professor Mallen is believed to be the first Western marketing scholar to visit Communist China. The funds enabling Professors Mallen and Richman to undertake this research have been provided by the Ford Foundation as a grant in their economic development and administration program. The grant, administered by the University of California, Los Angeles, is provided for research and studies of comparative management in several countries. The director of this $75,000 grant is Dr. Richman who has conducted first-hand research projects in comparative management in several Communist countries including the Soviet Union, and has published several books and numerous articles on the subject.

Dr. Mallen is President-Elect of the Montreal Chapter, American Marketing Association and consultant to many of Canada's leading corporations and government agencies. The young Professor holds the Ph.D. from New York University, the M.B.A. from the University of Michigan, the M.S. from Columbia University, and the B.Com. and B.A. (Philosophy) from Sir George. He is the author and co-author of scholarly papers and articles which have appeared in over a dozen periodicals. His fifth book, *Marketing in the Canadian Environment (Prentice-Hall),* will be released in late 1968. He is on the Editorial Review Board of the *Journal of Marketing* (U.S.A.) and is Editor-in-Chief of *The Marketer,* the journal of the Marketing Association of Canada.

After leaving China Professors Richman and Mallen will continue around the world and will be having discussions with businessmen in Japan, Thailand, Hong Kong, India, Israel, and Scandinavia. *(Continued on page 20)*

HISTORICAL PERSPECTIVE

(cont'd from page 5)

we would have to get on with a full degree programme of our own or get out of Engineering entirely. The record shows that many unusually and sometimes drastic manoeuvres were undertaken to maintain our relationship with McGill. A memorandum from Principal Hall, dated September 2nd, 1960, authorized the installation of "... the new strength testing machine ... in the northwest corner of the Men's Common Room ... as a temporary arrangement pending the consideration of the whole problem of engineering labs in view of changes recently brought about by McGill ..."

A Full Degree Programme

In November of 1960 the study of the fate of Engineering at Sir George was begun in earnest. The question of Engineering was considered within the larger context of the rapid expansion of the University and the need for appropriate physical facilities. Much discussion evolved, in which the main consideration was whether or not we should embark on the path of professional degree programmes. At its meeting of January 20th, 1961, the Faculty Council unanimously approved "... the principle of expanding our engineering offerings to the full degree level as soon as physically practicable ..." and recommended to the Board of Governors that the necessary facilities be included in the plan for general expansion of the University.

Subsequent developments seem almost anti-climactic. All that remained was to plan a completely new curriculum and a completely new plant, increase faculty strength by a factor of six or seven, gain local and national recognition, receive formal accreditation by the Corporation of Engineers of Quebec, teach our courses, and sign the first Diplomas for the Degree of Bachelor of Engineering!

Curriculum Planning

The basis upon which the old Certificate programme was developed had been simply this: to provide some evening opportunities, to follow McGill's curriculum almost to the letter, and to do a good job in the classroom. The constraints were few and well-defined, in sharp contrast to the planning for our own curricular goals and our own limits, where the constraints were many and not at all clearly defined. To our advantage the subject of Engineering curricula was well-documented. The American Society for Engineering Education publication, the Grinter report, (Journal of Engineering Education, Sept. 1955) had assumed the status of Bible for most engineering schools in North America, in the immediate post-sputnick years. With this as a preliminary specification and following much study of other curricula and consultation with others engaged in active curricula development a tentative scheme began to emerge. The basic premise was that our programme would include three professional disciplines, viz. Civil, Electrical and Mechanical Engineering. We would attempt to provide three full years of common studies followed by increasingly specialized programmes of a professional nature in the final two years. The goal was to provide a firm foundation of Science and Engineering-Science courses upon which to build a flexible forward-looking programme leading to graduate studies and/or professional practice. The definition of a curriculum which, in 1968, will provide the basis for the practice of Engineering in the year 2000 is clearly a difficult task, to say the least. It follows immediately that "skill-based" programmes will be doomed to failure in the long run. On the other hand, emphasis on scientific principles and mathematics, is most likely to produce graduates capable of assimilating new scientific breakthroughs and developing appropriate new skills as the need for these becomes apparent. The establishment of laboratories to support such a curriculum posed problems that did not exist ten or fifteen years ago, problems which we tackled with considerable ingenuity and careful attention to the needs of the immediate future.

Our present laboratories are among the very best on this continent, in the limited areas for which they have been designed. Our students are being given the opportunity to work with both traditional and novel experiments designed to emphasize measurement techniques rather than to simply reproduce handbook results. The measure of the degree to which we have met our objectives will be the success with which our graduates achieve their own personal goals after graduation.

Future Development

The success of our undergraduate programme will be measured also by the extent to which we play our role in the development of new Engineering knowledge. An active research programme, involving a high proportion of the faculty is now underway. This is a prerequisite to maintaining the standards of undergraduate teaching and to the development of post-graduate work. In June we will start the first Master of Engineering programme in Canada devoted solely to fully-employed Engineers. At this writing we have over one-hundred applicants

(Continued on page 20)

REFLECTIONS OF A GUINEA PIG

W. W. CRUDEN
DIRECTOR, POLYTECHNICAL DIVISION, ST. LAWRENCE COLLEGE OF APPLIED ARTS AND TECHNOLOGY, KINGSTON, ONTARIO, CORNWALL, ONTARIO

All the problems of men cannot be solved by making calculations and assessing chemical reactions and noting physical changes. Indeed, narrow specialization within a field has the inherent danger of producing a scientist who becomes like a man who lives in his own house and never leaves it. There he is perfectly familiar with everything, every corner of it, much as Quasimodo in Victor Hugo's "Notre Dame de Paris" knew the cathedral; but outside it things are strange and unknown and not of his concern. Yet the technologist trips over the principles of his art if he fails to take into account the over-all performance of society while devoting all his attention and skill and energy to perfecting one mechanism in it.

C. R. Young wrote to this effect in "Engineering and Society." As Dean of the Faculty of Applied Science and Engineering at the University of Toronto he said: "Young engineers in training should realize that it will be their high duty to utilize their technology in such a manner as not to endanger social stability. Both sound understanding and professional courage are called for in these situations."

These sentiments are felt and often expressed but so very seldom do we have occasion to see them put into action. In the past ten years I have twice had the unique opportunity of participating in the initial development of an educational idea; latterly as the Director of the Polytechnical Division of a new "Community College" in Ontario and initially as a member of the "Engineering Guinea Pigs" at Sir George.

From the outset of our experience at Sir George, we felt that the teaching of engineering at this school was different, that there was much more to learn than could be found in a handbook, and that we were being prepared to play a role that was as wide as society itself.

It would be very difficult for me to describe exactly what was different about our first classes. Of course there were many obvious things. We were very small, we had very little in the way of facilities, and we were faced with the problems which constantly beset any new programme. But there was a great deal more to those classes that was not obvious, at least not immediately. A special feeling, an esprit de corps, developed within the class and helped us to not only face our problems but to benefit from them. We felt that we had an important role to play in the history of Sir George and that the faculty was there not so much to teach, although they certainly did that, as to assist us in our contribution to this development. We gained so very much more than an engineering education and the credit for this must go to Dean Bordan and his staff for their constant encouragement and guidance.

Although the "Engineering Guinea Pigs" received their degrees from other universities, I am sure that I speak for our class when I express our envy of this year's class who were able to take their full five years at Sir George. All of us consider ourselves to be Georgians, and are very proud of it.

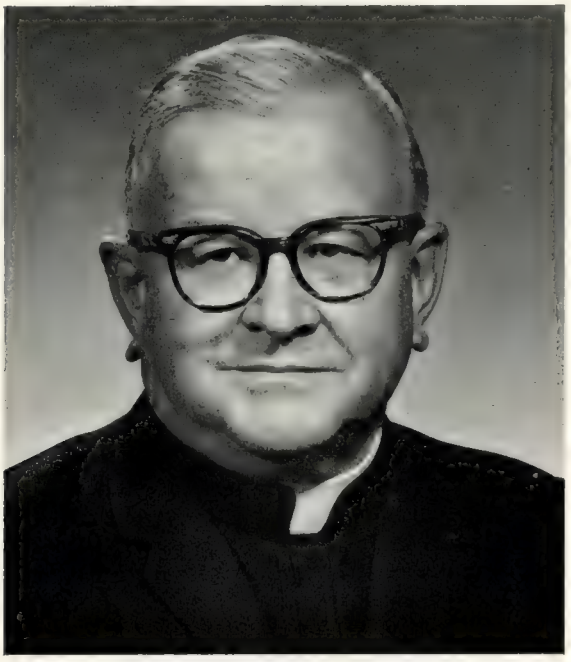
I suppose that I could reminisce at considerable length about our years as the only class of "plumbers" on the concrete campus but I would merely be giving reflections to old times and old days that are really ours alone. Instead I would like to close with a quotation from Dr. Hans Selye's book "From Dream to Discovery". "Whether he likes it or not the scientist must occasionally find time to leave the isolation of his laboratory and try to stimulate public understanding of what he is doing, for he is the only one who can do this." That is the true reflection of our years as Guinea Pigs.

Thank you, Dean Bordan, so very much.

St. Lawrence College is one of 19 community Colleges in Ontario, offering two and three-year post high school programs in Applied Arts, Business and Technology. A number of these Colleges, including St. Lawrence College, began operation for the first time in September, 1967. Unlike the Quebec "CEGEB", the Ontario "Colleges of Applied Arts and Technology" do not offer university transfer programs, they emphasize programs which are complete and vital in their own right.

The annual meeting as a business or organizational institution is often frought with the boredom of mechanical routine and attention to detail. This barren pattern was broken at the Annual Meeting of your Association on June 13th by the presentation of a talk by one of the most important men in education today.

EDUCATION AT THE ANNUAL MEETING



MONSEIGNEUR PARENT

The Royal Commission of Inquiry on Education in Quebec has long been known more familiarly by the name of its chairman, Monseigneur Alphonse-Marie Parent. The original concept of this commission has evoked interest and admiration within the entire milieu of education by its sheer scope; one might almost say, by its audacity of purpose. The report which emanated from the Parent Commission proposed reforms which form the basis of a system of education encompassing all degrees and stages from kindergarten through university.

Monseigneur Parent was named as chairman of the Royal Commission which was soon to bear his name because of his long and brilliant academic career. At the University of Laval he has been successively a Professor of Philosophy, Secretary General, Vice-Rector, and Rector.

He has been President of the Canadian Association of French Language Educators, President of the Canadian Conference of Universities and a Member of the Administrative Board for Commonwealth Universities.

He holds honorary degrees from Laurentian, Manitoba, McGill, Moncton, Montreal, Ottawa, Poitiers, Queen's, Sir George Williams, Toronto, Western Ontario, and Windsor.

In 1967, Monseigneur Parent was made a Companion of the Order of Canada, one of the first recipients of this award.

There can be little doubt that an address from such a scholar and authority, coming at this particular time, must be regarded as an item of essential interest for all those who have participated in the education process.

MECHANICAL

(cont'd from page 7)

Laboratories. Most of the Mechanical Engineering laboratories are located in the sub-basement of the Hall Building; these are the metallurgy, fluid mechanics, and combined heat transfer-thermodynamics-gas dynamics laboratories comprising a total floor area of some 10,000 square feet. Two draughting rooms are located on the ninth floor of the Hall Building with an experimental boiler on the fourteenth floor.

In addition to conventional laboratory equipment such as gasoline and Diesel engines, the laboratories are equipped with more recent advances in the field. Examples of these are a supersonic wind tunnel and a free piston engine composed of a gas producer with a small gas turbine driving a centrifugal compressor. However, the most significant equipment in the laboratories is the modern, versatile instrumentation, including high speed electronic engine indicators, multi-channel recorders, a digital data logger and a wide range of transducers for the measurement of velocity, acceleration, force, pressure and temperature. The overall result is to provide some of the best undergraduate Mechanical Engineering laboratories in Canada.

The Faculty of Engineering is just embarking on a Master of Engineering programme. Again, this programme is unique in Canada in that it has no full-time residence requirement, being intended exclusively for practicing engineers on a part-time basis. The regulations governing the programme are flexible, permitting a dissertation comparable to a conventional thesis in conjunction with a minimum course requirement of, essentially, a major report with additional course work. The work for the dissertation will be undertaken at the University by some students, but those engaged in suitable research, design, or development in their full-time employment will be encouraged to submit a dissertation based on that work, provided suitable arrangements can be made. The graduate programme in Mechanical Engineering will offer opportunities for courses and research in the same areas as the existing electives in the undergraduate curriculum. The well equipped laboratories do not present any problems to graduate research, and at the same time, grants in aid of research to Mechanical Engineering faculty members from outside sources for 1968-69 will amount to almost five times those received for the preceding year.

MEMORIAL FUND

All persons interested in raising a fund in the memory of *Mrs Lucille Irvine* are asked to please contact Mrs. Vivian Silver at 488-1001. We hope to purchase books which will be of assistance to Psychology students. Each of these will carry an inscription in the name of Mrs Irvine. Please support this effort as it is our hope to perpetuate the memory of a woman who has meant so much to us. If you wish you may forward your donations to:

The Lucille Irvine Memorial Fund
c/o Mr. W. M. Reay, Treasurer,
Sir George Williams University,
1435 Drummond St.,
Montreal 25, Que.

With deepest sympathy for his family, we announce the death of Anthony Lees, by car accident, on May 20th, 1968.

ELECTRICAL

(cont'd from page 11)

strong basis of the physical sciences, the engineering sciences, and mathematics. It attempts to bring before the student all aspects of professional competence: technical competence tempered with an awareness of the importance of cost, both material and human.

To provide the basis of technical competence in a field in which scientific discovery begs application at an ever increasing rate is no mean task. Curricula which merely enable the graduate to cope with today's technology have all but disappeared. Instead, there is now prime emphasis on the physical and engineering sciences and mathematics upon which the engineering courses are based. In electrical engineering most of the courses are analytic in nature so that a suitable combination of depth and breadth may be obtained within the time available. There are, however, a few courses in which the student is introduced to the concepts of design or synthesis. In this respect, electrical engineering, rather more than the other branches, makes little attempt to produce a graduate who is productive immediately on graduation. The electrical engineering graduate is one who has the potential of continuing the lifelong process of learning so that it is not until some time after graduation that he reaches full professional competence. It may be noted that in any case, he cannot attain professional status with the Corporation of Engineers of Quebec until he has completed at least two years generally described as "training".

The Physical Systems and Measurements course which completes the common part of the curriculum, is the foundation for almost all the courses in electrical engineering. The programme includes essential courses such as Electromechanics, Electronics, Network Analysis, Communication Theory, and Control Theory. However, the basic bourse on Control Theory may be followed by a second, and also by Control System Design, Advanced System Theory, Computer Organization and Software, Digital Computers in Systems, and Operations Research. This has been achieved by co-operation with Mechanical Engineering and the Computer Centre. As a result, a student in electrical engineering may obtain considerable depth in the field of Systems Engineering which is now becoming accepted as a separate discipline in engineering. Indeed, the fact that the electrical engineer is accustomed to modelling the dynamic response of rather abstract physical systems enables him to con-

(Continued on page 20)

ON THE MOVE?

If you are about to change your address or have just done so, would you please fill in the coupon and mail it to the Alumni Office, Sir George Williams University, Montreal.

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Occupation .....

(If your move involves a promotion, a new job, we'd appreciate a note for a news item in the Alumni Journal.)

ELECTRICAL

(Cont'd from page 19)

tribute extensively in the areas of automatic controls, data processing, instrumentation, transportation, urban growth, economic systems, social systems, etc. However, a student at Sir George might equally well follow a more conventional programme including either additional Electromechanics and Power Systems, or Electromagnetic Wave Propagation and Microwave Engineering.

The non-technical aspects of electrical engineering have also been included. Engineering Economy and Practice in the Fourth Year, emphasizes the importance of cost in reaching decisions and achieving designs. The importance of the social consequences of engineering, discussed earlier, is presented in Engineers and Society in the Fifth year. Also, in the Fifth Year, the Electrical Engineering Seminar gives the student an opportunity to improve his oral communication and at the same time, consider and discuss some of the broader implications of engineering.

The curriculum which has evolved at Sir George is complemented by excellent laboratory facilities, and is one of the most up-to-date in Canada. This, coupled with an experienced staff who are actively engaged both in research and professional activities, has enabled the electrical engineering degree of Sir George Williams University to become highly regarded within a short time. The manner in which our first graduating class has been accepted for graduate studies at other universities, and the scholarships received (including an Athlone Fellowship and a Science 1967 Scholarship) have been most encouraging. These seem to justify the expectation that the electrical engineering programme and faculty will continue to enhance the stature of Sir George Williams University.

HISTORICAL PERSPECTIVE

(Cont'd from page 15)

to this evening Masters programme. Active planning is underway for Doctoral work. It is abundantly clear that the need for advanced level work exists and that, true to our tradition, we intend to fill that need.

In an address at the dedication of the Engineering Quadrangle, Princeton University, in October, 1962 (reported in School and Society, February 23, 1963) Henry T. Heald, the president of the Ford Foundation said

> "Engineering is an art of synthesis, of consolidating the gains of scientific research, and of fashioning knowledge into systems and designs that are the most effective, feasible, and economic. In science, in social affairs, in diplomacy, politics and other fields of human endeavor, there is a pressing need not only for more knowledge, but also for synthesis, consolidation, and social invention. Engineering has provided the tools for momentous advances in many fields. One of the best means of exploring further opportunities for interaction is to give full range to engineering teaching and research in the University".

And to this we say, Amen.

NEWS RELEASES

S.G.W.U. TO CONDUCT SEMINAR

Sir George Williams University in co-operation with the Canadian Federation of Personnel Associations and the Montreal Personnel Association will offer a *two week seminar in Organizational Behavior and Manpower Planning and Development,* in June, 1968.

Subject: Organizational Behavior; Manpower Planning and Development.

Location: New Building of Sir George Williams University, located in downtown Montreal. The building is equipped with air-conditioned classrooms and with latest audio-visual devices.

Fee: $450. includes tuition, daily lunch, text books and other course material.

Further information may be obtained from:

Dr. Hem C. Jain
Director Montreal Seminar
Faculty of Commerce
Sir George Williams University
Montreal 25, Quebec

S.G.W.U. RESEARCH TURNS DISCOTHEQUE INTO PSYCHOLOGY LAB

Two Sir George Williams University researchers have designed an electronic lighting and sound system which will soon transform a downtown Montreal discothèque into a psychology laboratory.

Dr. George Marshall, Assistant Professor of Psychology, and research assistant Dennis Beatty, an electronics engineer, have developed a system which converts sound to light — different registers having corresponding colours, the intensity of colours varying with the volume of the sounds.

It has been installed in the Chameleon, a downtown discothèque, whose owners have agreed to allow the young research team to use the club for their experiments on coordinated stimulation to the senses. The discothèque is located just across from the University's Hall Building on Maisonneuve Boulevard.

Research started a year ago with a concern with the aesthetics of coordinating light and music — what happens when people see a picture of what they are hearing? Two prototypes were constructed, one with three colour channels and a more elaborate system with five. These automatically coordinate the intensity of sound with the intensity of coloured light, and the frequency or pitch of the music with the frequency or colour of the lights. When the lights are projected in various ways, the result is a moving abstract mosaic of colour identical to the intensity, tone and pattern of the music.

And what happens when people see a picture of the music or language they are hearing? Preliminary observations show the results to be, not surprisingly, extremely pleasant. Beatle Paul McCartney has predicted, "In the future all records will have vision as well as sound. In twenty years time people will be amazed to think we just listened to records". A number of kinetic artists have recently been concerned with this development. Dr. Marshall says, "Labels are beginning to mean very little these days since the division between the arts, the physical, and the behavioral sciences is more arbitrary than real. The study of problems as broad as communication, multi-media, and environments cuts across many disciplines. Mr. Beatty and I find ourselves both contributing to the technical, psychological, communication, multi-media, coordinated media,

aesthetic, total environment, clinical and research aspects of our work".

Dr. Marshall explained some of the fascinating implications research on co-ordinated sensory stimulation will have for various fields of study. These range from the McLuhan-like concern with total environment, multi-media and communication to more clinical investigation.

A student of his is now investigating the experience of poetry with and without light feedback. The level of the subjects' involvement is also being manipulated by having them either passively listen to another's reading or actively participate by reading the poetry themselves into a microphone which translates their words into colour.

Similar studies will be made of the experience of music with and without light feedback. Will those who have difficulty following music — its beat, melody or pattern — find the music easier to understand, more pleasurable, easier to remember when they see a picture of it? Will musicians, when they receive both visual as well as auditory feedback, create music differently, possibly according to the changing pattern, colour and intensity of the lights? Perhaps a musician will want to play more blue, or smear more green at a particular point.

Artists, musicians and critics have difficulty agreeing on what makes a good piece of music or art, and in fact cannot agree on the dimensions of analysis. Possibly making a piece of music, poetry or prose more concrete by visual feedback might give an approach to art analysis.

Another area of research is in the study of synesthesia — experiencing colours when solely listening to music, for example. Can synesthesia be induced or taught?

Some work of a more clinical nature in which simultaneously coordinated light-sound feedback would appear to have important implications is in the speech training of the hard of hearing. Speech therapists might be greatly helped in teaching rhythm and intonation of speech to the hard of hearing through the application of coordinated sensory feedback.

"It is somewhat amusing that a psychology laboratory should exist in the day in the same place as a discothèque at night", said Dr. Marshall. "But we shouldn't be too surprised. What occurs in a discothèque and a psychology laboratory is connected. The barriers between academic areas are not the only walls which are crumbling".

PERSONALITIES

40

Walter Harris, B.A., has resigned from his position as Executive Director of the Peterborough Red Cross and Community Fund to take up a similar appointment with the Thunder Bay District organization in the lakehead cities of Port Arthur and Fort William.

42

Fred Kerner, B.A., has been named to the Royal Blue Book. Fred is our man on the spot in New York as he is easily the most well known Georgian in the Empire City. His accomplishments are legion and one of these days we would like to do an in depth study on him when we have enough pages.

44

Dr. Israel Shtern, B.Sc., was honored by United Poets Laureate International on the occasion of World Poetry Day by a gold medal by the principal patron of the U.P.L.I., His Excellency President Ferdin and E. Marcos of the Phillipines.

46

Roger Lachapelle, who came to Sir George after leaving the air force at the end of World War II, is currently President of Meaghers Distillery Ltd.

51

J. D. Tucker, B.Sc., has been appointed as Plant Manager of the Don Mills plant of The UpJohn Company of Canada.

52

Dr. J. Bernard Tonchin, B.Sc., must be one of the most active people we know. He is a Captain in the Canadian Army Supplementary Reserve, on the fund raising group for the Canadian Ski Patrol, a first aid instructor for the Canadian Red Cross, active in the Mt. Royal Dental Society and the Alpha Omega Dental Fraternity, a member of the Canadian Dental Association, L'Association Dentaire de la Province de Québec, and the College of Dental Surgeons of the Province of Quebec. In spite of all this, he still invigilates exams at Sir George!

53

Peter Silverman, B.A., has been appointed as Research Director of Spitzer, Mills and Bates Ltd. in Toronto.

56

Andrew R. O'Brien, B.Comm., has been appointed to the position of product supervisor, packaging films, with Shawinigan Chemicals.

57

Charles R. Goulet, B.Comm., is currently the Marketing Manager for the Imbrex group of companies.

59

Erle P. Laviolette, B.Comm., is eastern regional manager of Walker Marketing of Canada Ltd.

John Mikula, B.Comm., is currently the Montreal branch manager of Office Overload and an active member of the Administrative Management Society, Montreal Chapter.

60

Dieter K. Schroder, Cert. Eng., has recently joined the Westinghouse Research Laboratories in Pittsburgh, Pa. in the area of semi-conductor electronics. After Sir George, he obtained his Bachelor and Masters degrees in electrical engineering from McGill and then his PhD. from the University of Illinois.

Lyle Sutherland, B.A., has received his M.Ed. specializing in Guidance and Counselling from the University of Maine.

61

Leslie Hudra, B.Comm., has successfully completed his Master of Science degree in Business Administration at Illinois State University.

Ian Kyles, B.A., has been appointed as Account Executive, Creative, for the Marketing Group of John B. Leupold Advertising Ltd. of Toronto.

William Keyes, B.Comm., has been awarded the professional designation of Chartered Financial Analyst by the Institute of Chartered Financial Analysts.

62

Joyce Courey, B.A., is now the production manager of Mark Advertising in Montreal.

Keith Sutherland, B.A., is attending the University of Vermont and hopes to obtain his M.A. this spring. He is on sabbatical leave from Pointe Claire High.

63

S. Czapalay, B.Sc., is presently head of mathematics department at Lindsay Place High School and spends part of his time as a lecturer at Sir George.

Douglas Sowery, B.Comm., is market supervisor for calendered vinyl products with Monsanto Canada Ltd., in Montreal.

Dan Coates, B.A., has been named research director for the Liberal Federation of Canada.

64

Ricky Zurif, B.A. has received his M.A. in English Literature from San Francisco State College.

William A. Clough, B.Sc., has announced his engagement to Miss Frances Zurek, of Montreal, with the wedding date set for August 24.

65

Dorothy Labensohn, B.A., has just completed an M.Ed. at the University of

Jim Hole, Cert. Eng., and **Ron Cheek,** Cert. Eng. are on a world tour following successful completion of their degrees in Civil Engineering at Western and Queens, respectively. They are currently somewhere in the midst of the Bombay to London leg of the journey, driving a Volkswagen camper.

Edward Richardson, B.A., married Mary Norma Griffin since our last issue went to press.

André Seguin, B.Sc., is manager, packaging, for Quebec and Atlantic Provinces with Canadian Industries Ltd. in Montreal.

Peter W. McKergow, B.A., will marry Miss Elinor Mills in early June.

Arend Visser, B.A., is attending the University of British Columbia's School of Social Work on a bursary from the Saskatchewan government.

Ian Waid, B.Comm., has been appointed as the Market Development Representative responsible for marketing studies in plastics with Dupont Ltd. in Montreal.

66

Susan Morrall, B.Sc., has been making headlines by the dozen of late, partly because she has just completed some important research on marine plants at Bellirs Research Institute in Barbados, and partly because she is a knockout in a bikini. Sue is off to England for doctoral studies and work as a model.

Robert Fox, B.A., is heading a centre in Toronto for the assistance of Indians from reservations and small towns as they attempt to adjust to big city life.

Harvey L. Borsuk, B.Sc. 66, B. Eng (candidate), was recently wed to the former Sandra Cohen of Montreal. Following a short vacation the couple will reside in Kingston, Ontario where Harvey has accepted a position as Production Engineer in the Industrial Product Line in the Textile Fibres Department of Dupont of Canada. Harvey plans evening graduate studies leading to the Masters Degree in Business Administration.

67

Gary Reinblatt, B.Comm., is engaged to Miss Ethel Brewda, of Toronto, with the big day set for June 30. Gary is a merchandiser with Sealtest Dairies in Toronto and Ethel is an elementary school teacher.

Dorothy Boddy, B.A., dropped in for a chat about her work with the Department of Northern Affairs in the Yellowknife country of the Northwest Territories.

Douglas Woodward, B.Comm., has been appointed as co-ordinator in charge of the administration of the Task Force on Agriculture in Ottawa.

William Bain, B.A., is project director of the Y.M.C.A. program to help chronically unemployed youth in Hamilton, Ontario.

68

Leonard Wolman, B.Comm., was married to Miss Mona Melamed on April 28.

Jeff Chipman, B.Comm., was married to Miss Elizabeth Ann Pearen of the Town of Mount Royal on May 4th.

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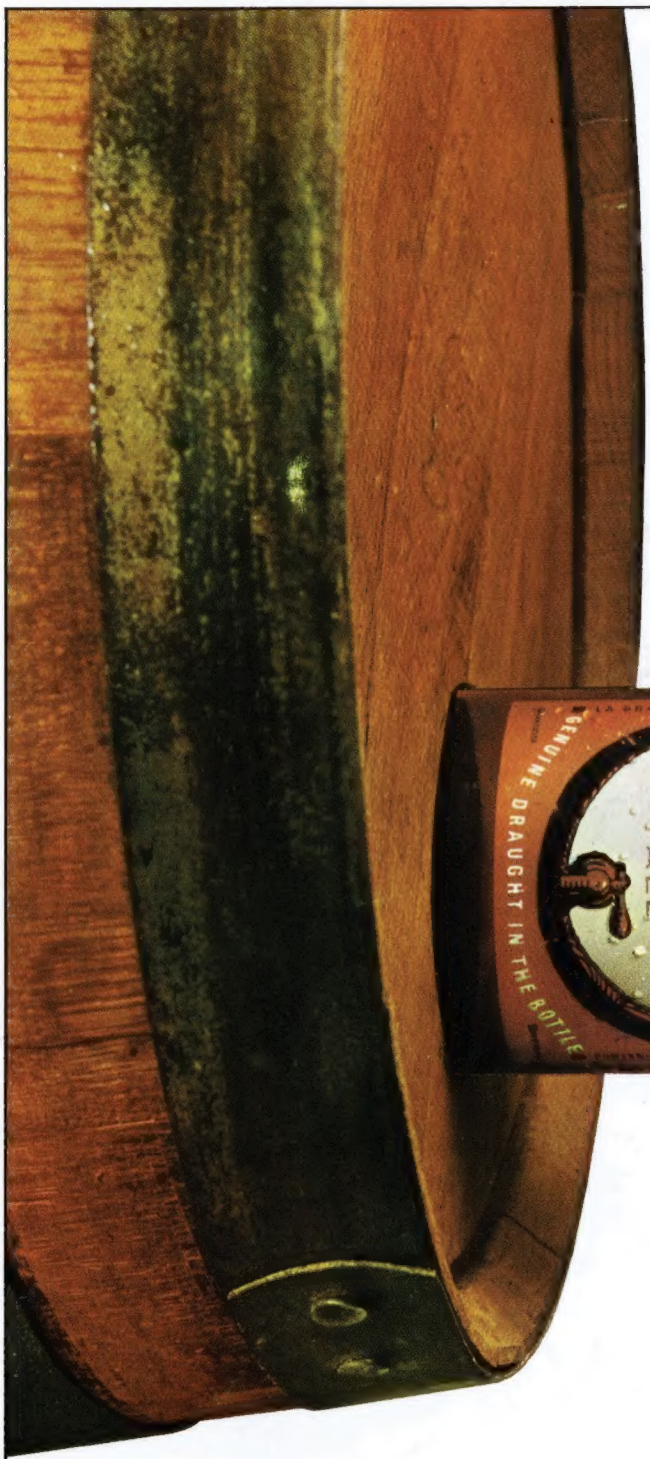

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